The Rocket Blog

A blog about anything related to rockets and space technology from news to how to make your own propellant.

FRIDAY, JULY 13, 2012

How to make nitrocellulose

Nitrocellulose, also known as gun-cotton, is like black powder but more powerful and smokeless. It is a bit more delicate to make than the other propellant I wrote about but can still be made at home.

You will need concentrated sulfuric acid (preferably 95%), nitric acid (70%), cotton and sodium hydrogenocarbonate (baking soda).
Here is how to proceed :

Chill the acids below 0°C.
In a fume hood, mix equal parts nitric and sulfuric acid in a beaker.
Drop cotton balls into the acid. You can tamp them down using a glass stirring rod. Don't use metal.
Allow the nitration reaction to proceed for about 15 minutes (Schönbein's time was 2 minutes), then run cold tap water into the beaker to dilute the acid. Allow the water to run for a while.
Turn off the water and add a bit of sodium bicarbonate (baking soda) to the beaker. The sodium bicarbonate will bubble as it neutralizes the acid.
Using a glass rod or gloved finger, swirl around the cotton and add more sodium bicarbonate. You can rinse with more water. Continue adding sodium bicarbonate and washing the nitrated cotton until bubbling is no longer observed. Careful removal of the acid will greatly enhance the stability of the nitrocellulose.
Rinse the nitrated cellulose with tap water and allow it to dry in a cool location.

You can dissolve it in acetone to make nitrocellulose lacquer, extrude it (the shape of your engine for example) and let the acetone evaporate (preferably outside) and you will have nitrocellulose in the required shape.

But beware nitrocellulose is easily ignited, it will burst into flame if exposed to the heat of a burner or a match.